

Claims

1. A binding molecule comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid
5 sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT).
- 10 2. A binding molecule according to claim 1 comprising
 - a) a first domain comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3 having the
15 amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT); and
 - b) a second domain comprising in sequence the hypervariable regions CDR1', CDR2' and CDR3', said CDR1' having the amino acid sequence Arg-Ala-Ser-Gln-Asn-Ile-Gly-Thr-Ser-Ile-Gln (RASQNIGTSLQ), CDR2' having the amino acid sequence Ser-Ser-Ser-Glu-Ser-Ile-Ser (SSSESIS) and CDR3' having the amino acid sequence Gln-Gln-Ser-Asn-Thr-Trp-Pro-Phe-Thr (QQSNTWPFT).
- 20 3. A binding molecule according to claim 1, which is a chimeric or humanised monoclonal antibody.
- 25 4. A binding molecule according to claim 1, comprising a polypeptide of SEQ ID NO:1 and/or a polypeptide of SEQ ID NO:2.
5. A binding molecule according to claim 1, comprising a polypeptide of SEQ ID NO:3 and/or a polypeptide of SEQ ID NO:4.
- 30 6. A binding molecule according to claim 4 which is a chimeric monoclonal antibody.
7. A binding molecule which is a humanised antibody comprising a polypeptide of SEQ ID NO:9 or of SEQ ID NO:10 and a polypeptide of SEQ ID NO:7 or of SEQ ID NO:8.

8. A binding molecule which is a humanised antibody comprising
- a polypeptide of SEQ ID NO:9 and a polypeptide of SEQ ID NO:7,
 - a polypeptide of SEQ ID NO:9 and a polypeptide of SEQ ID NO:8,
 - 5 - a polypeptide of SEQ ID NO:10 and a polypeptide of SEQ ID NO:7, or
 - a polypeptide of SEQ ID NO:10 and a polypeptide of SEQ ID NO:8.
9. Isolated polynucleotides comprising polynucleotides encoding a binding molecule according to claim 1.
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10. Polynucleotides according to claim 9 encoding the amino acid sequence of CDR1, CDR2 and CDR3, according to said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said
- 15 CDR3 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT).
11. Polynucleotides comprising a polynucleotide of SEQ ID NO: 5 and/or a polynucleotide of SEQ ID NO: 6.
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12. Polynucleotides comprising polynucleotides encoding a polypeptide of SEQ ID NO:7 or SEQ ID NO:8 and a polypeptide of SEQ ID NO:9 or SEQ ID NO:10.
13. Polynucleotides comprising a polynucleotide of SEQ ID NO:11 or of SEQ ID NO:12 and
- 25 a polynucleotide of SEQ ID NO:13 or a polynucleotide of SEQ ID NO:14.
14. An expression vector comprising polynucleotides according to claim 9.
15. An expression system comprising a polynucleotide according to claim 9, wherein said
- 30 expression system or part thereof is capable of producing a binding molecule comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and

said CDR3 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT), when said expression system or part thereof is present in a compatible host cell.

- 5 16. An isolated host cell which comprises an expression system according to claim 15.
17. Use of a molecule or of a humanised antibody according to claim 1 as a pharmaceutical.
- 10 18. Use according to claim 17 in the treatment and/or prophylaxis of autoimmune diseases, transplant rejection, psoriasis, inflammatory bowel disease and allergies.
- 15 19. A pharmaceutical composition comprising a molecule or a humanised antibody according to claim 1 in association with at least one pharmaceutically acceptable carrier or diluent.
- 20 20. A method of treatment and/or prophylaxis of diseases associated with autoimmune diseases, transplant rejection, psoriasis, inflammatory bowel disease and allergies comprising administering to a subject in need of such treatment and/or prophylaxis an effective amount of a molecule or a humanised antibody according to claim 1.
21. Use of a binding molecule having a binding specificity for both CD45RO and CD45RB in medicine.
- 25 22. The use according to claim 21, wherein the binding molecule is a chimeric, a humanised or a fully human monoclonal antibody.
23. The use according to claim 21, wherein the binding molecule binds to a CD45RO isoform with a dissociation constant (K_d) $<15\text{nM}$.
- 30 24. The use according to claim 21, wherein the binding molecule binds to a CD45RB isoform with a dissociation constant (K_d) $<15\text{nM}$.
25. The use according to claim 21, wherein the binding molecule binds CD45 isoforms which

- include the A and B epitopes, but not the C epitope of the CD45 molecule; and/or
- include the B epitope, but not the A and not the C epitope of the CD45 molecule; and/or
- isoforms which do not include any one of the A, B or C epitopes of the CD45 molecule.

- 5 26. The use according to claim 21, wherein the binding molecule does not bind CD45 isoforms which
- include all of the A, B and C epitopes of the CD45 molecule; and/or
 - include both the B and C epitopes, but not the A epitope of the CD45 molecule.
- 10 27. The use according to claim 21, wherein the binding molecule binds to its target epitope on PEER cells, and wherein said binding is with a $K_d < 15\text{nM}$.
- 15 28. Polynucleotides encoding the amino acid sequence of CDR1', CDR2' and CDR3', according to said CDR1' having the amino acid sequence Arg-Ala-Ser-Gln-Asn-Ile-Gly-Thr-Ser-Ile-Gln (RASQNIGTSLQ), CDR2' having the amino acid sequence Ser-Ser-Ser-Glu-Ser-Ile-Ser (SSSESIS) and CDR3' having the amino acid sequence Gln-Gln-Ser-Asn-Thr-Trp-Pro-Phe-Thr (QQSNTWPFT).
- 20 29. An expression system comprising a polynucleotide according to claim 10, wherein said expression system or part thereof is capable of producing a binding molecule comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3
- 25 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT), when said expression system or part thereof is present in a compatible host cell.
- 30 30. An expression system comprising a polynucleotide according to claim 11, wherein said expression system or part thereof is capable of producing a binding molecule comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3

having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT), when said expression system or part thereof is present in a compatible host cell.

- 5 31. An expression system comprising a polynucleotide according to claim 12, wherein said expression system or part thereof is capable of producing a binding molecule comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3
10 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT), when said expression system or part thereof is present in a compatible host cell.
- 15 32. An expression system comprising a polynucleotide according to claim 13, wherein said expression system or part thereof is capable of producing a binding molecule comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3
20 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT), when said expression system or part thereof is present in a compatible host cell.
- 25 33. An expression system comprising a polynucleotide according to claim 28, wherein said expression system or part thereof is capable of producing a binding molecule of comprising at least one antigen binding site, comprising in sequence the hypervariable regions CDR1, CDR2 and CDR3, said CDR1 having the amino acid sequence Asn-Tyr-Ile-Ile-His (NYIIH), said CDR2 having the amino acid sequence Tyr-Phe-Asn-Pro-Tyr-Asn-His-Gly-Thr-Lys-Tyr-Asn-Glu-Lys-Phe -Lys-Gly (YFNPYNHGTTYNEKFKG) and said CDR3 having the amino acid sequence Ser-Gly-Pro-Tyr-Ala-Trp-Phe-Asp-Thr (SGPYAWFDT), when said expression system or part thereof is present in a compatible
30 host cell.